BOTANICAL GAZETTE.

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THE SPECIES OF ISOETES OF THE INDIAN TERRITORY.—ISOETES MELANOPODA, J. Gay, originally found in central and northern Illinois, then in the neighboring regions of Iowa, seems to be peculiar to a belt of prairie country extending from northeast to southwest, from Illinois to Iowa, the Indian Territory and Texas. Mr. E. Hall, who discovered the species in Illinois, found it also some years ago in Dallas county, Texas, and now Mr. G. D. Butler sends it from the Indian Territory. However the other characters may vary, the macrospores every where readily characterize the plant. They are the smallest of any of our species, but varying in the same sporangium, between 0.25 and 0.35 mm., very rarely as much as 0.40 mm. in diameter, marked with confluent knobs and curved and twisted (worm-like,) low, sometimes almost indistinct, elevations, visible, of course, only under a strong magnifier. The velum or membranaceous fold, which more or less completely covers the spore case, or is, rarely, wanting, is in this species usually narrow, or sometimes wider; in the southern forms it covers about one-third of the upper half of the sporangium. Full-grown specimens are ½-1 inch in diameter at the almost always black and shining base of the leaves; these, smaller and fewer in the northern forms, are in the southern ones 20-50 in number and 8-12 inches in length, and, as I have described them in Gray's Manual, triangular, with 4 peripherical fibrous bundles and with numerous stomata.

ISOETES BUTLERI, *n. sp.*—I name an allied species discovered by Mr. Butler, near the latter, in drier soil, a much smaller plant with earlier (beginning of June) maturity. It is at once recognized by its larger macrospores, 0.50–0.63 mm. in diameter, marked with distinct knobs or warts, which rarely run together. The base of the plant is only ½ inch thick, the slender leaves with dull whitish bases, only 8-12 in number, are 3-6 or 7 inches long, of exactly the same structure as those of the last species. Velum very narrow or almost none. Microspores aculeolate in both, in the latter species a little larger than in the former.

The species of Isoetes are usually, as is well known, monœcious, the exterior sporangia bearing female or macrospores, the interior, later developing ones, male or microspores. But *I. melanopoda* is oftener diœcious than monœcious. Mr. Butler examined hundreds of specimens and found about one-third monœcious and two-thirds diœcious, and of these the male and female plants in about equal numbers. Of *Isoetes Butleri* he never could find a monœcious plant; all the specimens which he found as well as those which I examined, were diœcious, both sexes in about equal numbers.—G. ENGELMANN, *St. Louis, Nov.* 1877.

To the foregoing description by Dr. Engelmann I append some remarks in regard to the locality in which these plants occur. Both were found near Limestone Gap on the Missouri, Kansas & Texas railroad, about 70 miles north and 100 miles west of the Texas and Arkansas boundaries, near the divide between the Red and Arkansas rivers. The surface of the country is very rough, woods and prairies alternating and of about equal extent. There is a clay underlying most of the country. Many wells and springs running into or passing through this clay are damaged or sometimes rendered unfit for use by the quantities of the sulphates of magnesia and soda, entering into solution therefrom. Occasionally this clay arises to the surface, forming low, level places, which are popularly known as alkaline flats, but which I call "sulphate flats,"

these sulphates often occurring in a thin efflorescence on their surface. During winter and spring, while the rainy weather lasts, the sulphate flats, owing to their level surface and imperfect drainage, are very wet, but by or before the first of July, when the dry summer has well begun, they have become the driest of all dry places, for the clay prevented the water from soaking in, and the soil is so thin that an adequate store of moisture could not be laid up. What, in early spring was the home of moisture-loving species, has in summer a coat of such species as *Iva angustifolia*, and *Ambrosia psilostachya;* but even these are matured earlier and are smaller on the sulphate flats than elsewhere, owing probably to their dryness. Even *Opuntia Rafinesquii* grows on the flats, but it, too, has an unhealthy dwarfish appearance, though for a different reason, as I take it; it must have been for it such a great effort to endure the protracted drenching in winter and spring. These sulphate flats are the home of *Isoetes Butleri*. It disappears between the middle of June and the first of July. It grows with *Plantago pusilla*, *P. Patagonica*, var. *aristata*, *Polygala verticillata*, *Arenaria Pitcheri*, &c. There are occasional basins in the flats which contain more or less water, and here *I. melanopoda* grows. It also occurs in nearly all pools, ditches and wet weather streams. It is much more common than the other, or at least appears so, as it is so much easier to find, owing to its greater size, and paucity of companions. It disappears in August. Neither species will do well, if shaded.—GEO. D. BUTLER, *Almont, Iowa.*

AN ENUMERATION OF SOME PLANTS—CHIEFLY FROM THE SEMI-TROPICAL REGIONS OF FLORIDA—WHICH ARE EITHER NEW, OR WHICH HAVE NOT HITHERTO BEEN RECORDED AS BELONGING TO THE FLORA OF THE SOUTHERN STATES. BY A. W. CHAPMAN.

Anona glabra, L. Smooth; leaves sub-coriaceous, oval or oblong, acute, entire; peduncles short; petals thick and fleshy, ochroleucous, reddish within, the outer ones elliptical, the inner ones smaller, lanceolate; fruit smooth, globose or sub-conical, many-seeded; seeds oblong, compressed.—Banks of the Caloosa River, and near Miami, (Dr. Garber.) South Florida. June, fruiting in November.—A tree 10–30 feet high. Leaves, 3–5 inches long. Flowers, 1½ inches wide, fragrant.

Nymphæa flava, Lutres. A notice of this yellow Pond Lily is contained in Harper's Magazine for August, 1877. I have not seen the plant.

Gypsolea humifusa, Turp. Annual, smooth, succulent; leaves opposite, obovate; the petioles dilated into a lacerated stipule-like membrane; flowers axillary, minute, sepals obtuse, greenish within; petals none.—South Florida, *Dr. Blodgett* in Herb. Gray.

Malva parviflora, L. Stem stellate-hairy, the branches decumbent; leaves round-cordate, obtusely 5-lobed, crenate-serrate, downy, half as long as the petiole; flowers single or clustered, pale rose-colored; carpels deeply pitted on the back, the sides rugose. Waste places, Apalachicola. Introduced.

Malvastrum spicatum, Gray. Stem stout, branching, hairy; leaves on long petioles, ovate, acuminate, crenate, tomentose beneath, the lower ones cordate; flowers small, in dense axillary and terminal spikes or clusters; involucel 3-leaved, as long as the very hairy calyx, and the obliquely obcordate yellow petals; carpels 10–12, smooth, awnless. Apalachicola. Introduced. Stem 2–4 feet high.

Sida cordifolia, L. Tomentose; stem tall, branching; leaves cordate-ovate, entire, or angularly 3-lobed, crenate-serrate; flowers small, axillary, the upper ones crowded in a dense compound raceme; carpels 10–12, shorter than the two slender retrorsely scabrous awns.—Waste places, Cedar Keys, Florida, October. Annual. Stem 3–5 feet high. Leaves 2–3 inches long. Flowers ½ inch wide.

Pavonia spinifex, Willd. Shrubby, hirsute; leaves on long petioles, oblong-ovate, mostly cordate, serrate; peduncles mostly longer than the petioles; leaves of the involucel 8, lanceolate, longer than the calyx, shorter than the yellow corolla; carpels tri-

spinous.—Charleston, S. C., (*Rev. Dr. Bachman* in Herb. Durand.) Stem 3–5 feet high. Flowers 1 inch wide.

Urena Ribesia, Smith. ? Stem stout, much branched, tomentose; leaves roundish, sub-cordate, obscurely 3–5-lobed, whitish beneath, with 1–3 glands at the base of the ribs; flowers axillary, and crowded in a terminal raceme; involucel of 5–7 subulate lobes; corolla 3–4 times as long as the calyx; carpels 5, densely spinous.—South Florida. October. Annual. Stem 2–4 feet high. Flowers pale rose color.

Fugosia heterophylla, Vent. Smooth; stem angular, branching; leaves lanceolate or oblong, rarely obovate and 3-lobed, 3-nerved, the margin entire; flowers axillary, solitary, the long peduncles thickened under the flower; involucel of 8 or more minute subulate leaves; calyx dotted with black, the 3-ribbed acute lobes much larger than the tube; petals truncate; style clavate; capsule 12–20 seeded, the seeds woolly.—Lignum Vitæ Key, South Florida. Perennial. Stem 12–18 in. high. Flowers yellow, 1½ in. wide.

Hibiscus coccineus, var. *integrifolius*. Leaves ovate, acuminate, undivided, or the lowest slightly 3-lobed.—Marshes near Jacksonville, East Florida.

Riedlia serrata, Vent. Somewhat shrubby, hairy; stem branching, slender; leaves ovate, unequally serrate, acute; stipules linear, longer than the petioles; flowers axillary, mostly clustered, the upper ones forming a terminal interrupted spike; involucel 3 leaved, subulate, much shorter than the petals.—Banks of the Caloosa River, South Florida. October. Stem 2–4 feet high. Leaves 1 in. long. Corolla 1 in. wide, purple.

Riedlia hirsuta, DC. Stem pubescent and slightly muricate, much branched; leaves ovate, subcordate, acute, smoothish, crenate-serrate; stipules subulate, many times shorter than the petioles; flowers in dense terminal clusters; involucel setaceous; corolla small, pale rose color, yellowish within; filaments half united.—Waste places, Savannah, Georgia (*Dr. Feay.*) September. Annual. ? Stem 1–3 feet high. Leaves 2–3 inches long. Flowers ⅓ inch wide.

Triumfetta semitriloba, L. Hirsute, much branched; stem slender; leaves round-ovate, acuminate, serrate, entire or angularly 3-lobed; flowers clustered, axillary and terminal, the pedicels 3-flowered; sepals apiculate, as long as the wedge-shaped petals; stamens 10–15; capsule globose, bristly.—Waste places, Manatee, South Florida, (*Dr. Feay.*) Stem 3–4 feet high. Leaves thin. Flowers small.

Schœpfia arborescens, R. & S. Leaves ovate-lanceolate, entire; peduncles axillary, 1–3(mostly 2)-flowered, dilated at the summit into an angular receptacle; calyx truncate; entire; corolla bell-shaped, 4–5-lobed; stamens 4–5, opposite the lobes, partly adnate, ovary 2–3 celled.—Banks of the Caloosa River, South Florida. October. A small tree, with smooth, flexuous, brittle branches. Leaves 2–3 in. long. Flowers small, greenish. Fruit not seen.

Vitis (*Cissus*) *sicyoides*, L. Pubescent; leaves undivided, ovate, cordate, acute, finely and sharply serrate; cymes small, shorter than the leaves.—Banks of the Caloosa River, and at Palm Cape, South Florida. November. Stem long; the branchlets and leaves succulent. Berry globose, of the size of a currant.

Picramnia pentandra, Swartz Branches smooth; leaflets 5–7, ovate-oblong, entire, opposite or alternate, obtuse; racemes 3–4, slender, drooping, forming a simple terminal panicle; flowers small, single or clustered; stamens 5, exserted; stigmas sessile.—Miami, South Florida, (*Dr. Garber.*) June. A slender shrub, 8–10 feet high. Leaflets 2–3 in. long, distant, smooth and shining. Racemes 3–6 in. long.

Myginda pallens, Smith. Leaves elliptical, very obtuse, crenate, smooth, nearly sessile; peduncles forking, with the middle flower stalked; style distinct, 4-cleft.—South Florida, *Dr. Blodgett*, in Herb. Gray.

Sapindus Saponaria, L. ? Petioles broadly winged; leaflets 6 or 8, mostly opposite, oblong, obtuse, mostly equal-sided, paler and pubescent beneath; panicle tomentose,

hoary.—South Florida. November. A small tree. Panicle loosely or densely-flowered. Drupe size of that of *S. marginata*.

Polygala Rugelii, Shuttelworth. Stem simple, or at length branching above; leaves alternate, lanceolate, acute, sessile, the lowest ones narrowed into a petiole; spikes long-peduncled, globose; wings oblong-obovate, cuspidate; caruncle and seed as in *P. lutea*. Tampa, (*Rugel and Feay*). Stem 12–18 in. high. Flowers drying dark brown.

Crotalaria maritima, n. sp. Stem low, much branched, pubescent with short appressed hairs; leaves simple, small, oblong, sub-sessile, very thick and succulent; stipules minute and narrowly decurrent, or none; raceme 2-flowered; legume smooth. Sandy beach at Palm Cape, South Florida. Stem 6 in. high. Leaves 1 in. long. Flowers not seen.

Crotalaria pumila, Ort. Perennial.? Stems spreading, slender, smoothish; leaves trifoliate, leaflets small, oblong-obovate, emarginate, longer than the petiole; stipules minute; peduncles much longer than the leaves, few-flowered; corolla small, yellow; legume nodding, oval, pubescent. (*C. littoralis*, H. B. K.)—Sandy beach at Casey's Pass, South Florida. October. Stem 2–3 feet long, sparingly branched. Leaflets ½–1 in. long. Legume ½ in. long.

Crotalaria incana, L. Annual, erect, much branched, pubescent; leaves trifoliolate, long-petioled, leaflets round-obovate, shorter than the petiole, smoothish, paler beneath; stipules setaceous, caducous; raceme stout, many-flowered, the bibracteolate pedicel nodding; keel of the yellow corolla tomentose on the margin; legume oblong, villous. Coast of South Florida from Cedar Keys (*Dr. Garber*) to Cape Romano. October. Stem 3–5 feet high.

Petalostemon roseum, Nutt. Leaflets 3–4 pairs, very narrow linear; calyx smooth, the teeth nearly as long as the tube; petals obovate, rose-color; bracts setaceous, longer than the calyx; otherwise like *P. violaceum*.—Low pine barrens, East Florida.

Lespedeza striata, Arnott & Hook. Stem branched, pubescent; leaves small, leaflets oblong-obovate, mucronate; stipules persistent, scarious, ovate-lanceolate, strongly veined, twice as long as the petioles; racemes 1–5-flowered, shorter than the leaves; calyx veiny, the ovate teeth shorter than the round-ovate reticulate legume; flowers purple. Fields and way-sides, Macon, Ga. (*Dr. Mettaur*, 1865). Now spreading over the Southern States. Introduced from Asia. Stem 6-18 in. high. Leaves ½-1 in. long.

Desmodium triflorum, DC. Stem filiform, prostrate, rooting at the joints, pubescent; leaflets small, obcordate, smooth above; peduncles axillary, 2-3 together, 1-flowered; legume curved, 3-4-jointed, the joints flat, semi-circular.—Waste places, Manatee, South Florida, (*Dr. Feay, Dr. Garber*). Stem 6-12 in. long.

Erythrina Corallodendron, L. ? The tree I saw on the banks of the Caloosa River in October was 15-20 feet high, and 4-5 in. in diameter, without flowers or fruit. The leaves were like those of *E. herbacea*.

Galactia Cubensis, H. B. K. Stem long, twining, villous; leaflets oval or oblong, rarely acute, soon smooth above, silky beneath, rather longer than the villous petioles; racemes curving, longer than the leaves, spicate; flowers approximate, large, purple, the vexillum obliquely striate; legume silky, falcate, compressed, 10-seeded. (*G. spiciformis*, var: Chapm., S. Fl.) South Florida (*Rugel* in Herb. Gray.)—Lignum Vitæ Key. November.

Ecastaphyllum Brownei, Pers. Stem branching, slender; leaflet single, ovate, acute, finely pubescent above, paler and velvety beneath, short petioled; panicle cluster-like, axillary, as long as the petiole; corolla small, white; legume orbicular, compressed, 1-seeded.—Banks of the Caloosa River. November. Miami, South Florida. (*Dr. Garber.*)—Shrub 4-8 feet high. Leaflets 3-5 in. long. Legume 1 in. long.

Cassia ligustrina, L. Annual? Smooth, mostly simple: leaflets 10-16, opposite,

lanceolate, oblique at the rounded base, the subulate gland near the base of the petiole, or rarely between the lowest pair of leaflets; racemes short, axillary, the upper ones approximate, few-flowered; sepals obtuse; legume linear, slightly curved, compressed, many seeded.—Sandy coast, from Tampa Bay southward, South Florida. Stem 3-4 feet high. Leaflets 1½–2 in. long. Legume 4 in. long.

Psidium pyriforum, L. (Guava) Branchlets 4-angular, compressed; leaves thick, opposite, oval-oblong, strongly veined, paler and softly pubescent beneath; pedicels axillary, 1-flowered; fruit pear-shaped.—Clear Water Harbor and Southward, South Florida. Introduced. A small tree.

Jussiæa macrocarpa, Vahl. Branches hirsute; leaves broadly lanceolate, acute at each end, hirsute; peduncles barely longer than the 2-bracted club-shaped ovary; calyx-lobes 4, ovate-lanceolate, acuminate, longer than the tube, shorter than the roundish petals; capsule wedge-oblong, obscurely 4-sided, longer than the bracts.—Muddy banks of the Caloosa River and at Miami, (*Dr. Garber*) South Florida. Shrub 5-10 feet high. Leaves 3-4 in. long. Corolla 2 in. wide.

Mentzelia Floridana, Nutt. This is a shrubby trailing plant, 3-10 feet long, from Tampa Bay southward.

Viburnum involucratum, n. sp. Leaves small, varying from oblong to broadly ovate, entire, irregularly serrate, or slightly 2-3-lobed, acute at each end, or rounded at the base; cymes small, compact, the base and ramifications involucrate with a whorl of linear or spatulate bracts.—Wooded hill-sides. West Florida. April. Shrub 2-4 feet high. Leaves 1-2 in. long.

Richardsonia scabra, St. Hill. Annual, hirsute, the branches dichotomous; leaves thick, ovate, acute, rough above and on the veins beneath, the 2 upper pairs involucre-like; calyx-lobes subulate; corolla funnel-shaped, 3-6-lobed; nutlets 2-3, oblong. (*Spermacoce involucrata*, Ph!)—Southern Alabama, thence spreading throughout the warmer parts of the Gulf States. Stem ½-3 feet long. Flowers white.

Vernonia angustifolia, Michx., var. *pumila*. Stem low (6-12 in.), slender, smoothish; leaves (1-1½ in. long) scattered, flat, lanceolate, entire, or the lowest minutely denticulate; heads 3-7 in an open cyme, pedicellate; involucre purplish, smooth; pappus yellowish; achenium smooth, furrowed.—Wet pine barrens near the Caloosa River, South Florida. October.

Pectis ciliaris, L. Stem erect, branching, smooth; leaves linear, crowded, sub-connate, bristly fringed below the middle; heads linear, nearly sessile; rays 3, pappus of the disk flowers of 5 lanceolate acuminate scales, of the rays 3.—Collier's Key, in Caximbas Bay, South Florida. September. Stem 1 feet high.

Eupatorium suaveolens, n. sp. Stem long, slender, smoothish, branching; leaves small, ovate, tapering to the obtuse apex, abruptly contracted at base, coarsely and unequal.y serrate, 3-nerved, twice as long as the very slender petioles; corymbs loose, compound, pubescent; heads 12-14-flowered; corolla white, achenium slightly pubescent. Clear Water Harbor and Manatee, South Florida. November. Stem 2-3 feet long. Leaves 1-1½ in. long. Flowers very fragrant. Closely allied to *E. aromaticum*, but with the habit of *E. incarnatum*.

Eupatorium tortifolium, n. sp. Stem erect, slightly scabrous, pubescent, corymbose above; leaves vertical, lanceolate, entire, sub-sessile, 3-nerved, the upper ones linear, alternate; corymb compound, villous; heads large, crowded, 5-flowered; scales of the involucrum linear, acute, villous; achenium smooth; pappus stout, longer than the white corolla.—Dry pine barrens, Decatur county, Georgia. Stem 12-18 in. high. Leaves 1-1½ in. long.

Conoclinium dichotomum, n. sp. Stem smoothish, erect, diffusely dichotomous; leaves opposite, deltoid, barely acute, crenate-serrate, truncate and entire at the base, twice as long as the short petiole; corymbs very numerous, mostly in the forks of the

branches, dense, short-peduncled; heads few (3-10), on short pedicels; flowers blue. South Florida. Stem 1-2 feet high. Leaves 1-1½ in. long. Flowers smaller than those of *C. cœlestinum*, blooming, in cultivation, from May until frost.

Ooclinium rigidum, DC. Frutescent at base, closely pubescent; stems numerous, erect, branching; leaves opposite, ovate, crenate-serrate, acute, longer than the petioles; pedicels single, or 2-3 together in the forks of the branches, unequal, longer than the cylindrical many-flowered heads; scales of the involucre smooth, closely imbricate, striate, obtuse, deciduous; flowers (about 20) pale blue; achenium smooth, 3-4-angular; receptacle globular or truncate naked.—Jew-fish Key, South Florida. November. Plant 2 feet high, exhaling a strong unpleasant odor.

Acanthospermum xanthioides, DC. Stem prostrate, diffusely branching, pubescent; leaves opposite, oval or obovate, toothed or entire; heads single, terminal and in the forks of the branches, many-flowered; rays yellow; chaff of the receptacle obtuse, unarmed at the tip.—Aiken, South Carolina (*Ravenel*), Atlanta and Savannah, Georgia, Jacksonville and Gainesville, Florida.

Actinomeris heterophylla, n. sp. Stem erect, mostly simple, sparingly hirsute, terete and nearly naked above, the lower part winged by the decurrent leaves; leaves muricate, the lower ones oblong, opposite, approximate, half clasping, serrate, decurrent, the upper linear, opposite or alternate, small (½-1 in. long), remote, entire; heads solitary or corymbose, on slender peduncles; scales of the involucre lanceolate, mostly shorter than the disk, shorter than the 5-10 linear yellow rays; chaff of the receptacle rigid, acute, longer than the obovate narrowly winged 1-2 awned achenium.—Sandy pine barrens, East Florida. Stem 2-3 feet high. Leaves 2-3 in. long.

Flaveria angustifolia, Pers. Stems shrubby at the base, numerous, erect, smooth, branching; leaves thick, lanceolate, acute, remotely serrulate, connate and sheathing at base; corymbs numerous, compact; heads 10-15 flowered, angular, discoid, or with a single oblong entire ray.—Sand Key, at Clear Water Harbor, Oct. Stems 2-4 feet high.

Palafoxia Feayi, Gray. Shrubby; stem slender, widely branching, roughish with short rigid hairs; leaves ovate and lanceolate, opposite and alternate, longer than the short petioles; corymbs loose, spreading; heads discoid; achenia slender, sparingly hispid, as long as the linear obtuse scales of the involucre, and many times longer than he obtuse denticulate scales of the pappus.—Tampa Bay (*Dr. Feay*), and southward to Caximbas Bay. South Florida. October. Stem 3-5 feet long. Leaves 1-2 in. long.

[*To be continued.*]

NOTES ON HEPATICOLOGY, BY C. F. AUSTIN.—TRICHOCOLEA BIDDLECOMIÆ, *n. sp.*—Caule tenella arcte repens (semper?) subunciali simpliciter breviter pinnato, foliis fere transversalibus (subsuccubis) illis et amphigastriis fere ad basim capillaceo dissectis, fructu—?

On a rotten log in the cedar swamp, near Urbana, Ohio, 1876, *Miss H. J. Biddlecomie.*

Much smaller than the smallest form of *T. Tomentella* (EHRH.) NEES, ever observed by me, and readily distinguished from it by its simply and rather distantly pinnate stems. Its habitat, on rotten wood (to which it closely adheres), is also peculiar.

T. Tomentosa (SWARTZ) NEES, has a similar ramification, but is also a much larger plant, with the leaves strongly succubous (very oblique), and often not divided more than half way to the base.

TRICHOCOLEA GRACILLIMA, *n. sp.*—Caule gracillimo biunciali irregulariter dissitiuscule bipinnatim-ramoso, rameis apice subrecurvis foliis subsuccubis fere ad basim dissectis, segmentis terretis (articulatis) pro genere crassis, fructu—?

On shaded ground, Island of West Maui, (altitude 4,000 ft.), *D. D. Baldwin* (*Eaton.*)

Readily distinguished by its very slender habit, irregularly bipinnate ramification and by the thicker capillary divisions of the leaves.

T. mollissima, TAYL.=*T. Tomentella! T. lanata*, (HOOK.) NEES=*T. tomentosa* (fide specimen from New Zealand, in Herb. SULLIV. ex-Herb. LEHM.) *T. Tomentella, Hepaticæ Cubensis Wrightianæ=T. tomentosa!*

A FEW NOTES ON THE CHANGES OBSERVED IN VEGEATION.—I cannot say how extensive these changes have been, but the observations made extend over several square miles of surface. Of course one has to depend on the testimony of others for some of his facts in such a matter as this. In the town of Windsor, Conn., there are acres of land covered with White Birch, in place of a heavy growth of Pitch Pine that occupied the land when the place was first settled. Some fields are covered with White and Red Oak, with some Chestnut and Black Oak, in place of the pine first found there. Others still are now covered with White Birch and scrub pines, that once were covered with a heavy growth of White and Black Oaks, with some Red Oak and Chestnut. The hazelnut bushes have made their appearance in many placcs—taken possession would perhaps be better, and White Pines are not unfrequent. The *new* growth referred to came in after the soil had been cultivated for quite a length of time. In fact it requires but a few years for a field to put on a good covering of timber, if lett to itself. One field I have in my mind now, that has quite a heavy "second growth,"—pines, oaks, chestnut, &c.—that less than forty years ago was planted to corn. The owner told me he had raised good crops of corn and rye on that same field.

There must have been some source whence such changed vegetation was derived. Can any one tell from what source the seeds of an entirely dissimilar vegetation are derived? Soil brought up from almost any depth and kept from contact with the air, has been known to produce plants unlike any ever before seen in the locality. At least, what seems to be well authenticated instances of the kind, are reported. In some parts of England where "Parks" have been cleared, an entirely new kind of timber springs up. Whence the seeds? One theory is that the seeds of a former vegetation have preserved in the soil, their vitality being such that when shut away from the influence of the air they retain it a long time. The wheat found wrapped up with Egyptian mummies is given as an example. Another theory is the germs are floating in the atmosphere, and when they find a favorable spot they take root; but the seeds of forest trees do not float very much. I will repeat my question, Can any one tell whence these seeds?—N. COLEMAN, *Berlin, Conn.*

RECENT PUBLICATIONS.—*American Journal of Science and Arts*, November.—"Is the Existence of Growth-rings in the Early Exogenous Plants proof of Alternating Seasons?" This is an extract from a paper read before the N. Y. Academy of Sciences, by Chas. B. Warring, Ph. D. Various observations are mentioned and the facts established by them are formulated in the following propositions:

1. Some exogens form rings at intervals much less than a year.
2. Others require intervals of several years.
3. Some form no rings.
4. The presence or absence of rings in exogens occurs in all climates.
5. Large and well defined rings are found under conditions in which there is absolutely no appreciable variation of temperature or moisture throughout the year.
6. An exogen naturally forms rings, will continue to form them although the climate become uniform through the year.

The existence, therefore, of these markings in the ancient flora gives no information as to the existence at that time of seasons, and so far as they are concerned we are left free to adopt any conclusion as to the inclination of the earth's axis which may appear to us most reasonable.

Bulletin of the Torrey Botanical Club, September and October.—These are very interesting numbers, being full of valuable observations. Mr. Leggett is getting out another edition (it may be issued before this reaches the readers of the GAZETTE,) of the Botanical Directory. We regret that we were not able to give it wider notice owing to our beginning Vol. III. with the year, instead of publishing November and December numbers. We hope that all of our readers will be prompt with information and with orders for copies. The price will be for a single copy, 40 cents; three copies for $1.00; a dozen for $3.00. Address WM. H. LEGGETT, 54 *Eighty-first street, New York.*

Field and Forest, October.—The Botanical Articles are "A Botanist's Winter Evenings,'. by W. W. Bailey, and "Notes on the Fungi of Maryland."

Proceedings of the Academy of Natural Sciences of Philadelphia, Part II., April, May, June, July, and August, 1877.—The Botanical Notes are "On the *Eucalyptus globlus*," by Jos. Wharton, "Poisonous Properties of the Leguminosæ," by Dr. J. T. Rothrock, and "The Lacquer Tree," by Thos. Meehan.

Bulletin of the Minnesota Academy of Natural Sciences, 1877.—The most of this number is devoted to the "Mycological Flora of Minnesota," by Dr. A. E. Johnson. In it are listed 559 species all new to the State, two of which are new to science. Two divisions, six families, twenty orders, and seventy-seven genera are represented. Dr. W. H. Leonard gives a list of the Ferns of Minnesota, enumerating 30 species.

Catalogus Plantarum in Nova Cæsarea Repertarum.—If any State deserves a catalogue of its plants, surely New Jersey does, for its rich and varied flora has made it the Mecca of botanists. Dr. Oliver R. Willis has made this a very complete and handsome publication. He gives hints to beginners, and a list of plants recommended for their use, directions for drying and preserving plants, and a botanical directory. He enumerates 1,603 species of Phænogamous plants, 40 species of Equisetaceæ, Filices, and Lycopodiaceæ, and 28 species of Marine Algæ. There are 325 species of Musci, and 100 species of Hepaticæ found in the State, but not named in this catalogue, thus making an aggregate of 2,196 species of plants in the State.

American Naturalist, November.—A note on "Poisonous Grasses," gives the symptoms and antidotes for the poisoning resulting from eating *Stipa Sibirica. Melica* and *Lolium* are also spoken of as poisonous. An unusually large specimen of *Ostrya Virginica* is put on record. The girt of the stem at the ground was 9 feet 11 inches, at 4 feet from the ground 7 feet 2 inches; height to first branches 6 feet 4 inches; spread of branches from east to west 47 feet, from north to south 45 feet; height of tree 48 feet 7 inches. If any larger individual has been observed we would like to hear of it.

I much desire herbarium specimens of *Mertensia paniculata* and *M. maritima.* Will exchange for them *M. alpina* and *M. lanceolata* of the Rocky Mountain Alpine region.—H. N. PATTERSON, *Oquawka, Ill.*

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